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Abstract

A method for measuring the variation in dimensions and the deviation of a position of the resistance detector element and the MR element that may become error factors in an in-process mensuration method of the height of the MR element wherein the resistance of the resistance detector element is measured during a lapping process and converted to the height of the MR element, a high numerical aperture optical system employing DUV light of a wavelength in the 200 nm is combined with a stage system with an effective straightness of the order of 10 nm and further a high-precision automatic focusing system which can match both DUV light and a high numerical aperture application is used together with the above-mentioned combination, comprising a measurement system for the method. By adopting this configuration, mensuration of an image with high precision, high stability, and high resolution can be implemented, and mensuration of the MR elements covered with end face protection films and the resistance detector elements can be performed to find their dimensions and alignment error with a high degree of accuracy.